WHAT IS CLAIMED IS:

1. A chemical hydride hydrogen generation system, comprising:

a storage means for storing a chemical hydride solution comprising a solution of chemical hydride solute in a solvent;

a reactor containing a catalyst, catalyzing reaction of the chemical hydride to generate hydrogen; and

a first supplying device, connected between the storage device and the reactor, for supplying the chemical hydride solution from said storage device to said reactor so that the chemical hydride solution reacts to generate hydrogen in the presence of the catalyst;

wherein the system further includes delivery means for delivering additional solvent to the chemical hydride solution, as the chemical hydride is consumed in use.

2. A chemical hydride hydrogen generation system as claimed in claim 1, wherein the chemical hydride solution is a borohydride water solution.

3. A chemical hydride hydrogen generation system as claimed in claim 1, wherein the chemical hydride solution is a water solution in which the solute isin the form of MB_xH_y, wherein M is a metal.

4. A chemical hydride hydrogen generation system as claimed in claim 3, wherein the solute is selected from the group consisting of: $NaBH_4$, $LiBH_4$, KBH_4, $RbBH_4$.

5. A chemical hydride hydrogen generation system as claimed in claim 1, wherein the chemical hydride solution is a water solution in which the solute comprises $NaBH_4$ and $LiBH_4$ comprising less than 5% by weight.

6. A chemical hydride hydrogen generation system as claimed in claim 1, wherein the chemical hydride solution is a water solution in which the solute is NH_3BH_3.

7. A chemical hydride hydrogen generation system as claimed in claim 1, wherein the chemical hydride solution further includes a freezing point depressing agent.

8. A chemical hydride hydrogen generation system as claimed in claim 7, wherein the freezing point depressing agent is glycerol.

9. A chemical hydride hydrogen generation system as claimed in claim 8, wherein concentration of glycerol is less than 5% by weight.

10. A chemical hydride hydrogen generation system as claimed in claim 9, wherein concentration of glycerol is 1% by weight.

11. A chemical hydride hydrogen generation system as claimed in claim 1, wherein the chemical hydride solution further includes alkaline additives.

12. A chemical hydride hydrogen generation system as claimed in claim 11, wherein the alkaline additive is selected from LiOH, KOH, and NaOH.

13. A chemical hydride hydrogen generation system as claimed in claim 11, wherein the alkaline additive is 0.1% NaOH by weight.

14. A chemical hydride hydrogen generation system as claimed in claim 1, further includes a return line for the solution between the storage device and the reactor, and a flow control means that operatively stops said first supplying means when the hydrogen pressure in the said reactor reaches a first value and activates the said first supplying means when

the hydrogen pressure in the said reactor falls to a second value lower than the first value.

15. A chemical hydride hydrogen generation system as claimed in any of the preceding claims, wherein the system further includes a heat exchanger for the said reactor capable of, separately, removing heat from the said reactor and supplying heat to said reactor.

16. An energy system, comprising:

a fuel cell for generating electricity and water from hydrogen and an oxidant;

a chemical hydride hydrogen generation system, comprising:

a storage means for storing a chemical hydride solution comprising a solution of a chemical hybrid solute in a solvent;

a reactor containing a catalyst, catalyzing reaction of the chemical hydride to generate hydrogen;

a first supplying means, connected between the storage device and the reactor, for supplying the chemical hydride solution from said storage to said reactor so that the chemical hydride solution reacts to generate hydrogen in the presence of the catalyst;

a connection between said reactor and said fuel cell for supplying hydrogen to the fuel cell; and

a recovery means for recovering the water generated in the said fuel cell and supplying the recovered water to the chemical hydride solution during the reaction as the chemical hydride solution is consumed in use.

17. An energy system as claimed in claim 16, wherein the recovery means includes a gas-water separator.

18. An energy system as claimed in claim 17, wherein the said recovery means further includes a catalytic burner between the fuel cell and the gas-water separator, and wherein said catalytic burner includes inlets connected to outlets of the fuel cell for excess oxidant and hydrogen

so as to bring the unreacted hydrogen and the oxygen in the exhaust gas from the said fuel cell into reaction to form water.

19. An energy system as claimed in claim 18, wherein the said system further includes a first valve connected to the outlet of the fuel cell for excess hydrogen, and to the catalytic burner and to a hydrogen recycle line connected to an inlet of the fuel cell, selectively allowing the excess hydrogen leaving the fuel cell after reaction to be circulated back to the said fuel cell in a first mode and allowing the hydrogen to be supplied to the catalytic burner from the said fuel cell in the second mode.

20. An energy system as claimed in claim 19, wherein the said system further includes a first control means that operatively switches the first valve between the first and second modes.

21. An energy system as claimed in any of the claims 16 to 20, wherein the said connection further includes a filtering means between the said reactor and the said fuel cell for purifying the hydrogen generated in the said reactor before the hydrogen is supplied to the fuel cell.

22. An energy system as claimed in any of the claims 16 to 20, wherein the system further includes a second control means that operatively stops the said first supplying means when the hydrogen pressure in the said reactor reaches a first value and activates the said first supplying means when the hydrogen pressure in the said reactor falls to a second value lower than the first value.

23. An energy system as claimed in any of the claims 16 to 20, wherein the system further includes a heat exchanging means for the said reactor that selectively removes heat from the said reactor and heats up the said reactor to control the hydrogen generation reaction.

24. An energy system as claimed in claim 16, wherein the chemical hydride solution is a borohydride hydride water solution.

25. An energy system as claimed in claim 16, wherein the chemical hydride solution is a water solution in which the solute is in the form of the form of MB_xH_y, wherein M is a metal.

26. An energy system as claimed in claim 25, wherein the solute is selected from the group consisting of: $NaBH_4$, $LiBH_4$, KBH_4, $RbBH_4$.

27. An energy system as claimed in claim 16, wherein the chemical hydride solution is a water solution in which the solute is $NaBH_4$ and less than 5% $LiBH_4$.

28. An energy system as claimed in claim 16, wherein the chemical hydride solution is a water solution in which the solute is NH_3BH_3.

29. An energy system as claimed in claim 16, wherein the chemical hydride solution further includes a freezing point depressing agent.

30. An energy system as claimed in claim 29 , wherein the freezing point depressing agent is glycerol.

31. An energy system as claimed in claim 30, wherein concentration of is glycerol less than 5% by weight.

32. An energy system as claimed in claim 31, wherein concentration of glycerol is 1% by weight.

33. An energy system as claimed in claim 16, wherein the chemical hydride solution further includes an alkaline additive.

34. An energy system as claimed in claim 33, wherein the alkaline additive is selected from LiOH, KOH, and NaOH.

35. A chemical hydride hydrogen generation system as claimed in claim 34, wherein the alkaline additives is 0.1% NaOH by weight.

36. An energy system as claimed in any one of claims 16 to 20, wherein said fuel cell comprises a fuel cell stack including a plurality of fuel cells.

37. A method of generating and supplying hydrogen to a fuel cell, the method comprising:

(a) providing a supply of a solution comprising a solvent and a chemical hydride dissolved therein;

(b) when hydrogen is required, supplying the solution to a reactor containing a catalyst to catalyze reaction of the chemical hydride to generate hydrogen;

(c) delivering the generated hydrogen to the fuel cell;

(d) recovering water from consumption of hydrogen in the fuel cell;

(e) supplying recovered water to the supply of the solution, to compensate for water consumed during reaction of the hydride to generate hydrogen, and to promote maintenance of concentration levels for products of the reaction generating hydrogen at acceptable levels, thereby to delay onset of any precipitation of said products tending to limit generation of hydrogen.